

Having thus defined the invention, we claim:

1. An apparatus for extracting a sample from a strip of material, said apparatus comprising:  
  
a roller having a periphery surface;  
  
a cutting wheel having a cutting die extending from its periphery; and  
  
wherein said material strip advances between said roller and said cutting wheel, said  
  
cutting wheel rotating in coordinated relation to the advance of said material strip,  
  
said cutting wheel rotating into a position wherein said cutting die engages said  
  
material strip and rotates through engagement with said periphery surface of said  
  
roller thereby extracting a sample from said material strip.
2. The apparatus of claim 1 wherein said periphery surface of said roller is hardened so as to  
withstand repeated engagement with said cutting die.
3. The apparatus of claim 2 wherein said periphery surface is coated with a generally non-  
adhesive substance so that said strip of material does not adhere to said periphery surface of said  
roller during extraction of said sample.
4. The apparatus of claim 3 wherein said hardened periphery surface of said roller  
comprises steel.

5. The apparatus of claim 1 wherein said cutting wheel has a plurality of cutting dies extending from its periphery.

6. The apparatus of claim 1 wherein said cutting die comprises:

A hollow body connected at one end to the periphery of said cutting wheel and open at the opposite end, wherein said sample is retained within said hollow body after extraction from said strip.

7. The apparatus of claim 6 further comprising a ejector means located within said hollow body so that engagement of said ejector means forces said sample out of said hollow body.

8. The apparatus of claim 7 wherein said ejector means comprises an ejector pin located within said hollow body for forcing said sample out of said opening during actuation thereof.

9. An apparatus for extracting a sample from a strip of material, said apparatus comprising:

a roller having an axis of rotation  $x$  and a hardened periphery surface;

a cutting wheel having an axis of rotation  $y$  that is coplanar to said axis of rotation  $x$ ;

a cutting die extending from the periphery of said cutting wheel, said cutting die

comprising a generally hollow body connected at one end to the periphery of said cutting wheel and open at the opposite end thereof;

wherein said material strip advances between said roller and said cutting wheel, said cutting wheel rotating in coordinated relation to the advance of said material strip, said cutting wheel rotating into a position wherein said open end of said cutting die engages said material strip and rotates through engagement with said hardened periphery surface of said roller thereby extracting a sample from said material strip and retaining said sample within said hollow body.

10. The apparatus of claim 9 wherein said cutting die is removably mounted to said cutting wheel to permit cutting dies of various shapes, sizes, and configurations to be used to extract samples.

11. The apparatus of claim 9 further comprising at least one sample retaining pin located within said hollow body and connected at one end to said cutting wheel, said at least one sample retaining pin piercing said sample during the extraction thereof and holding said sample within said hollow body by frictional engagement during rotation of said cutting wheel.

12. The apparatus of claim 9, further comprising a second cutting die extending from the periphery of said cutting wheel to extract a second sample from said material strip during a single revolution of said cutting wheel.

13. The apparatus of claim 12 wherein the first die is laterally offset a distance from the center of the cutting wheel periphery so that the first sample is extracted off-center from said material strip of given width.

14. The apparatus of claim 13 wherein said second cutting die is laterally offset a distance from the center of the cutting wheel periphery opposite that of said first die so that said second sample is extracted off-center from said material strip of given width.

15. The apparatus of claim 14, wherein said first and second cutting dies are located 90 degrees apart on the periphery of said cutting wheel so that the samples taken from a material strip of given width are staggered along the length thereof.

16. An apparatus for extracting a sample from a material strip and testing the physical properties of said sample, said apparatus comprising:

a roller having a peripheral surface;

a cutting wheel having a cutting die extending from its periphery;

wherein said material strip advances between said roller and said cutting wheel, said

cutting wheel rotating in coordinated relation to the advance of said material strip,

said cutting wheel rotating into a position wherein said cutting die engages said

material strip and rotates through engagement with said periphery surface of said

roller thereby extracting a sample from said material strip; and

means for ejecting said sample from said cutting die; and

means for conveying said sample to a testing mechanism for testing the physical properties of said sample.

17. The apparatus of claim 16, wherein said means for ejecting the sample is located within said cutting die so that engagement of said ejector means forces said sample out of said cutting die and onto said conveying means.

18. The apparatus of claim 17, wherein said ejector means comprises an ejector pin located within said cutting die, that when actuated, forces said sample out of said cutting die.

19. The apparatus of claim 16, wherein said means for conveying said sample comprises a strip of film material which passes through said testing mechanism and is arranged to act as a conveyer belt, samples to be tested are located on the film material upstream of the testing mechanism, and are in turn conveyed to the testing mechanism and removed from the testing mechanism by intermittent activation of film strip drive means.

20. The apparatus of claim 17 further comprising a second strip of film material placed over the sample material prior to advancing to the testing mechanism so that the samples are sandwiched between the first and second strips of film material.

21. A method for extracting a sample from a material strip comprising:

advancing a strip of material between a roller having a hardened periphery surface and a cutting wheel having a cutting die extending from the periphery thereof;

rotating said cutting wheel so that said cutting die engages said strip of material and said hardened roller periphery, thereby extracting a sample from said strip; and

rotating said cutting wheel to an ejection position, whereby said sample is ejected from said cutting die.

22. A method for removing a material sample from a material strip and testing said material, said apparatus comprising:

cutting a sample of material utilizing a rotary die cutting mechanism;

loading the sample between strips of a transport medium;

conveying said strips containing said sample therebetween to a testing mechanism;

performing tests on the sample held between the strips to determine the physical

properties of the sample; and

unloading the sample from the testing mechanism.